ARCHEOLOGICAL WORK IN ARCTIC CANADA

BY

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[With 14 plates]

Southampton Island, a bleak and treeless land mass some 17,000 square miles in extent, forms the northwestern boundary of Hudson Bay, separating it from Foxe Channel and Foxe Basin to the north. Though the island is 50 miles below the Arctic Circle, its shores remain icebound for about eight months of the year, and its climate, vegetation, flora, and fauna are all typically Arctic.

The island is of particular interest to archeology for two reasons. It was the home of a strange, primitive tribe of Eskimos—the Sadlermiut—who became extinct in 1903 before they had been studied by ethnologists. And long before this, in prehistoric times, the island had been occupied by two other groups of Eskimos, those of the Thule and Dorset cultures. The Thule people had come originally from Alaska, about 800 years ago, and were commonly assumed to have been the ancestors of the Sadlermiuts. The Dorsets were a little-known Eskimo people of markedly different culture who had occupied the central and eastern Arctic long before the arrival of the Thule migrants from the west. This was the locale and these the problems selected by our 1954 expedition to Southampton Island, sponsored by the Smithsonian Institution, the National Museum of Canada, and the National Geographic Society. We hoped to obtain information on the early inhabitants of the island and the different ecological, climatic, and cultural conditions that had prevailed there at different times in the past, on the physical type of the old populations, and on the cultural relationships between the three Eskimo groups—Dorset, Thule, and Sadlermiut.

We planned to establish camp at Tunermiut (Native Point), 40 miles down the coast from Coral Harbour, and spend the greater part of the summer excavating at a large abandoned Sadlermiut site and a smaller Dorset culture site that had been reported there (Bird, 1953). In midsummer we planned to charter an Eskimo Peterhead boat for a trip over to uninhabited Coats Island to the south, where the

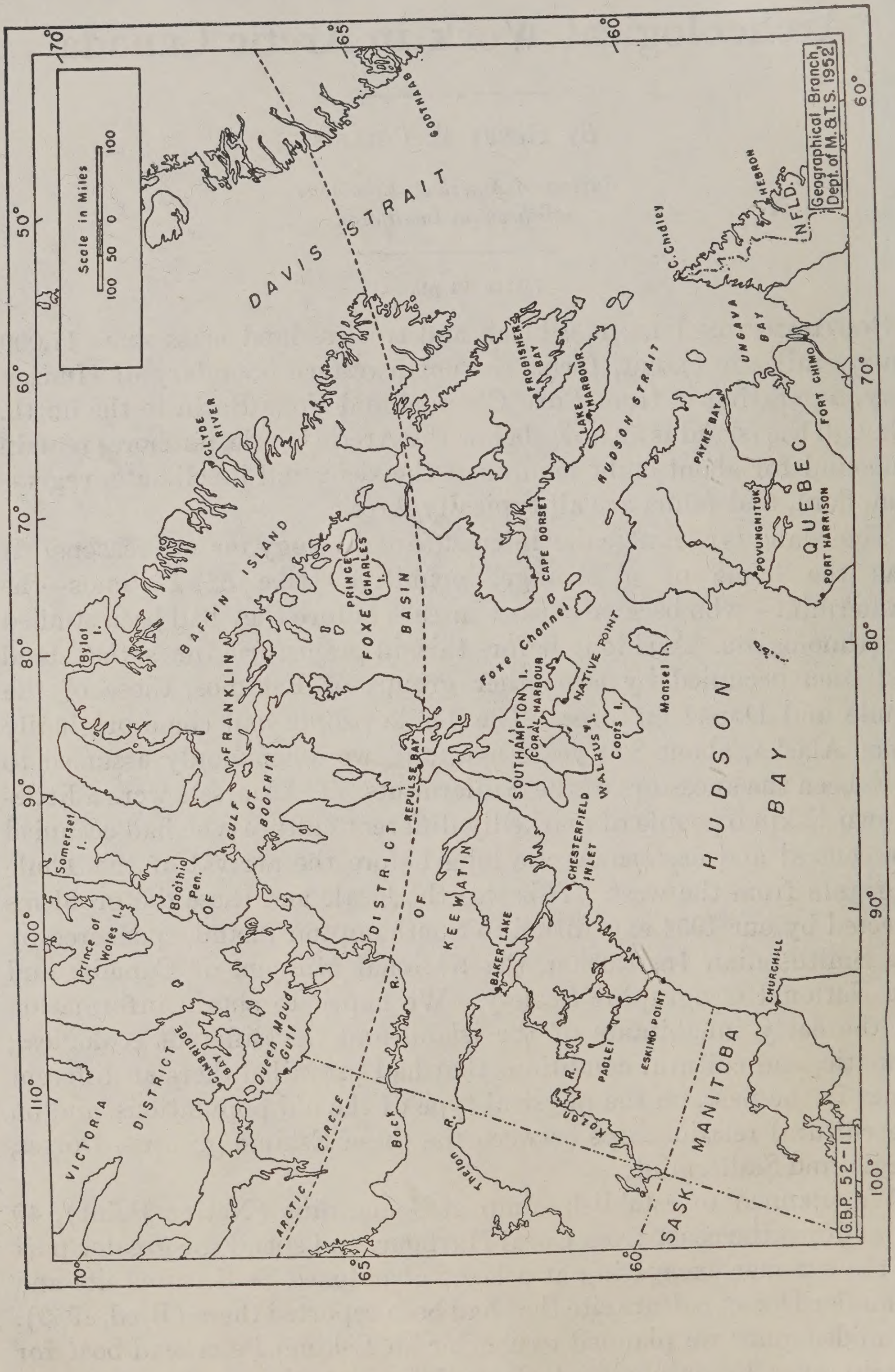

FIGURE 1.—General map of eastern Canadian Arctic.

Sadlermiuts were first encountered by Capt. Lyon in 1824 and where we hoped also to find village sites of the earlier Dorset people. This paper will be in the nature of a narrative account of the expedition, describing the circumstances under which the work was conducted, as well as the results accomplished.

On June 23 our party, consisting of Dr. J. Norman Emerson, William E. Taylor, Jr., Eugene Ostroff, and myself, was flown by the R. C. A. F. from Montreal to Churchill on the west coast of Hudson Bay. Here we stopped overnight and picked up a supply of 5-in-1 military rations, tents, and Arctic clothing which the U. S. Quartermaster Corps had kindly provided for our use. The next morning we flew over to Coral Harbour on the south coast of Southampton Island, arriving around noon. Our immediate destination was the Hudson's Bay Company post and Eskimo village 3 miles east of the airstrip, but as most of the snow had disappeared from the ground, making sled travel overland impossible, we had to get there by a roundabout route. Our supplies and equipment were loaded on an Air Force truck and taken to a small Eskimo settlement bearing the strange name of "Snafu," on the coast 3 miles to the south. Here we engaged Eskimos to take us the rest of the way by dog team over the sea ice. It was a short trip of about 7 miles, a new experience for most of the party and a prelude to the much longer sled trip we were to begin next day. The name of this little Eskimo settlement comes from a wrecked oil tanker, referred to as the *Snafu*, which ran aground there during World War II. The proper tribal name of these Eskimos is Okomiut, but they are now also called "Snafumiut," a designation they cheerfully accept, unaware of its somewhat derogatory connotation. The Okomiuts came originally from southern Baffin Island, having been brought to Southampton when the Hudson's Bay post was established there in 1924. They constitute the minority element in the present Eskimo population of Southampton Island. Most of the Eskimos now living on the island are Aiviliks from the Repulse Bay-Wager Bay area on the mainland to the west, who were brought over by the whalers around 1908. The total Eskimo population is about 240, mostly concentrated around the Hudson's Bay post, where we were now headed.

A. T. Swaffield, the post manager, met us and had our equipment taken up to one of the company storehouses and the neat little 3-room lodge where we were to stay until we left for Native Point. The problem now was how to get down to Native Point. Normally the ice breaks up by July 4th so that boat travel is possible by that time. This year, however, the prospects were that the breakup would be possibly as much as two weeks later. As we were anxious to get to Native Point and begin work as soon as possible, Mr. Swaffield called in one of the Eskimos, Pangiyuk, to discuss the situation. Like most of the other Southampton Eskimos, Pangiyuk speaks hardly any English, but Swaffield, through years of experience as a Hudson's Bay manager, has developed a considerable proficiency in the Eskimo language.

Pangiyuk said that the sea ice, though somewhat rough and sloppy, was still safe for sled travel and that his dog team and three others were ready to take us down to Native Point as soon as the weather permitted. The sky was then dark and overcast, it was raining and windy and the barometer was falling; but the weather changes with surprising rapidity in the Arctic, and by next morning the rain had stopped and the sun was out. Our food supplies, tents, sleeping bags and other equipment were hauled down to the rocky beach and loaded onto the four sleds. Because of weight limitations, the aircraft that had taken us to Coral Harbour had been able to bring only half of our food supplies. The remainder was to be brought over from Churchill on the July flight and delivered to us at Native Point by the Eskimo Peterhead boat that was to take us to Coats Island.

It was perhaps just as well that we had no more of a load for the four sleds were already filled to capacity. A skiff was lashed on each sled and the boxes and other gear piled inside (pl. 1, A). This was necessary in order to keep the supplies from getting wet, as the sleds were very low and would have to traverse areas where at this time of year there would be up to six inches of water on top of the ice. It was also desirable as a precautionary measure in case we encountered wide leads in which a sled without a boat would sink.

As the weather was fine and the night as bright as day, we planned to go directly to Native Point without stopping for the night, hoping to make the 40-mile trip in around 10 hours. This proved to be a somewhat optimistic estimate, for the trip required 14 hours, including time out while the Eskimos hunted seals basking on the ice beside their breathing holes.

The sleds were pulled by from 8 to 10 dogs who jogged along at a good trot to the constant accompaniment of the drivers' "Wo-ah" (right), "Ah-ee" (left), and other sounds more like grunts than words but which were clearly intelligible to the dogs. Sometimes, though, when the dogs had not responded properly there would be a deluge of words—undoubtedly Eskimo invective and profanity—similar in purpose to the conventional remarks a mule driver uses in addressing his team. When language failed, the long whip would swish out and the offending dog would emit a surprised yelp and start pulling.

There was almost as much water as ice surface, though most of it was only a few inches deep, in pools that usually contained deeper holes which had to be avoided (pl. 1, B). The sleds negotiated the open leads and pools with little trouble, though for the passenger sitting on top it was a rather bouncy, bumpy ride, frequently interrupted by his having to jump off and help pull the sled over an ice hummock or through a patch of soft snow. Most of the leads were narrow enough for the dogs to jump over. Occasionally, however, there were wider leads, half the length of the sled, which the dogs would have to swim, and here it would be necessary for Eskimo driver and passenger to hop off and help pull the sled across.

At 5 a. m. on June 26th the long trip was over as the weary dogs pulled the sleds up to the beach at Native Point and settled down to rest. But before we could rest we had to unload the sleds and haul our gear over the rocky beach to the dry level spot 100 yards away that we had selected as a camp site. The wall tent was set up, we brought our sleeping bags inside and went to sleep about 6 a. m. Later that day we put up the other tent, got camp organized and made a preliminary inspection of the ruins we were to dig.

With the departure of our Eskimo friends next morning, we were the sole inhabitants of Native Point, or indeed of the whole southeast end of the island. The first day was spent looking over the sites, exploring the gravel ridges—old beach lines—to the east, south, and west, and planning our operations for the summer. I had selected Native Point for excavation largely on the basis of a manuscript report by W. D. Bell, archeologist on Dr. J. Brian Bird's geographical expedition of 1950 (Bird, 1953). Bell had reported that this site, known to have been the principal settlement of the extinct Sadlermiut, contained the largest aggregation of old Eskimo house ruins in the Canadian Arctic. He had also discovered some middens containing Dorset culture material on an elevated headland 1 mile away.

Though we expected this to be a fine spot archeologically, we were hardly prepared for what we found. The Sadlermiut site was tremendous. It consisted of the ruins of about 75 semisubterranean dwellings in addition to a dozen old "qarmats" or autumn houses built by Aivilik Eskimos who had camped there in recent years. Some of the older Sadlermiut houses appear now as only slight depressions on the grass-covered surface of the old beach ridges, but most of them are fairly well preserved, their sunken interiors and entrance passages filled with a jumble of stones that had formed the walls and roofs (pl. 2, A). Whale bones, which the Thule Eskimos and the Sadlermiuts on the northern end of the island often used in house construction, had been rarely used for that purpose here. The walls were made of stones and blocks of sod, and the floor, roof supports, and sometimes even the roof itself were of stone. The ground outside the houses was littered with the skulls and bones of animals eaten by the

Sadlermiuts, mainly seals, walrus, caribou, and polar bears, and additional thousands of such bones were visible in the bottom of a shallow pond which dried up before the summer was over (pl. 2, B). Stone cairns and meat caches by the hundreds were found along the beach in front of the site and on the old shorelines for miles around. Human burials, numbering well over 100, were to be seen at the site itself and along the adjacent beach ridges. The burials within the village were of the surface variety; the bodies had been laid on the surface of the ground and merely surrounded by a row of stones. Away from the village the bodies had been placed in carefully constructed vaults of limestone slabs (pl. 3). Human skulls and bones were also visible in some of the house ruins. These were the remains of the very last of the Sadlermiuts, who died here in the epidemic of 1902–3. Most of the graves, however, were made of stones that were heavily incrusted with lichens and were probably more than a hundred years old.

To excavate a site of such magnitude completely and carefully would have required years of work by a party far larger than ours. However, our plans did not call for extensive excavations. We wished only to sample the houses and middens, digging enough to give us a rounded picture of Sadlermiut culture and leaving the bulk of the site intact for future archeologists. We planned to dig only two houses, Number 37, which appeared to be one of the most recent, and Number 30, one of the oldest (pl. 4). The excavation of these houses and of selected midden areas and graves yielded a large collection of artifacts which provided the essential information needed. Some of the Sadlermiut artifacts are illustrated on plate 5.

The Sadlermiuts have been one of the puzzles of Eskimo ethnology. They were first described by the British explorer Capt. G. F. Lyon, who met them in 1824 on the southwest coast of Coats Island, which then and for many years later was thought to be a part of Southampton Island. American, English, and Scotch whalers began operating in Hudson Bay in the 1860's, but as far as known they rarely came into contact with the Sadlermiuts who, probably because of their isolation, remained aloof from other Eskimos as well as whites. Three of the whalers, Captains Comer (1910), Munn (1919), and Ferguson (1938), published brief observations on the Sadlermiut, and a number of their typical artifacts, collected by Comer, were described by Boas (1901–7). In 1922 the Danish archeologist Dr. Therkel Mathiassen while excavating on the north side of Southampton Island, obtained valuable information on the Sadlermiut from two old Aivilik Eskimos who had lived for a few years among them (Mathiassen, 1927).

The Sadlermiut population seems to have declined steadily after the coming of the whalers. In 1896 Capt. Comer estimated their number at 70, most of them living at settlements on the south side of the island, mainly at Native Point. In the winter of 1902–3 the Sadlermiut were struck by an epidemic, which seems to have been typhoid, and the entire tribe perished except for two children who had previously been adopted by the Aivilik.

Without exception, those who had an opportunity to observe the Sadlermiuts were impressed by the many differences between them and other Canadian Eskimos. Their language was different, they lived in permanent semisubterranean stone dwellings instead of snow houses, and the men wore bearskin trousers and tied their hair in an enormous knot above the forehead. Another striking difference was that the Sadlermiut, instead of using iron tools like the Eskimos all around them, still made their knives, harpoon blades, and other implements from chipped flint.

It has been commonly thought that the Sadlermiut were the descendants of the old Thule people, the last remnant of this prehistoric Eskimo population which originated in Alaska and spread eastward to Arctic Canada and Greenland some seven or eight hundred years ago. There was undoubtedly a connection of some kind between Sadlermiut and Thule, but as a result of our work at Native Point it seems more likely that the Sadlermiuts, instead of being the actual descendants of the Thule people, had merely been influenced by Thule culture. On the other hand, there are strong indications that the Sadlermiuts were related in some way to the Eskimos of the prehistoric Dorset culture, perhaps even descended from them. One of their most important implements, the harpoon head with which they captured seals and walrus, was demonstrably derived from one of the Dorset types. In our excavations at the Sadlermiut site and the three Dorset sites at Native Point, we found harpoon heads that clearly show the transition from Dorset to Sadlermiut. Stone side blades on knives and lances are another feature which the Sadlermiuts appear to have taken over from the earlier Dorset people. Our later work on Walrus Island suggests that even the Sadlermiut form of dwelling may have been borrowed from the Dorset Eskimos. It might also be mentioned that the Sadlermiut, according to their own tradition, came to Southampton from Baffin Island, and that their dialect seems to have been related to that of the Okomiut of that area. The Sadlermiut also lived on Coats Island and probably on Mansel and the islands in Hudson Strait, and it was on these same islands and the southern part of Baffin Island that the Dorset culture had previously flourished. In short, both prehistoric Dorset and modern Sadlermiut occupied the same territory in the Hudson Bay and Strait area. Though the evidence is still incomplete, it would seem not unlikely that the Sadlermiut, whose anomalous position has long puzzled ethnologists, were the descendants of the mysterious Dorset people who were the other, and principal object of study of our expedition.

The Dorset culture was first described by Dr. Diamond Jenness (1925) on the basis of material in the National Museum of Canada excavated by Eskimos at Cape Dorset on the south coast of Baffin Island and on Coats and Mansel Islands. The material described by Jenness differed strikingly from that found at Thule culture sites. The Dorset people had used chipped-stone instead of rubbed-slate implements. Their harpoon heads and other bone and ivory artifacts were small and delicate, and entirely different in form from those made by the Thule Eskimos. The Dorset collection contained no trace of such typical Thule elements as whalebone mattocks, snow shovels, bone arrowheads, bow drills, ulus, harness toggles, or other evidences of dog traction. Another striking difference was that the Dorset artifacts were usually deeply patinated. In the past 25 years Dorset sites have been excavated at a number of localities in the eastern Arctic from Newfoundland to Greenland. These excavations, however, added little to what Jenness had originally deduced as to the age, relationships, and significance of the Dorset culture. It was clearly older than the Thule culture, for Dorset implements, and in some cases Dorset occupation levels, were found underlying Thule (Holtved, 1944; Collins, 1950). Though the Dorsets had ocupied the central and eastern Arctic many years before the arrival of the Thule people in the twelfth and thirteenth centuries, a few groups of them continued to live on long after that. Evidence of this is a small Dorset site of post-Thule age excavated by Dr. Deric O'Bryan (1953) on Mill Island to the east of Southampton. And if the hypothesis mentioned above is correct, the Sadlermiut themselves may have been such a remnant group, though one greatly modified by contact with the Thule culture. To test this hypothesis we would need information on Sadlermiut sites somewhat older than the one at Native Point, sites that might reveal an earlier stage of Sadlermiut or Dorset-Sadlermiut culture lacking distinctive Thule traits, particularly the bow drill.

The main Dorset culture site at which we excavated was 1 mile to the east of the Sadlermiut site. It was situated on the gently sloping surface of a 70-foot-high headland, a hill or plateau of glacial till, which had once fronted on the sea but which now lies half a mile back from the present beach (pl. 6, A). Extending east and west over this now elevated surface and clearly visible only from the air, are a number of low, closely spaced curving ridges of sand and gravel—remnants of marine bars that were formed when sea waves washed over the surface during the post-glacial marine submergence that inundated the Hudson Bay lowlands following retreat of the glacial ice.

It would be difficult to imagine two Eskimo habitation sites more different than this and the big Sadlermiut site. The Dorset site, which was much larger than we had anticipated, had the appearance of a flat, level meadow or pasture (pl. 6, B). Its surface was covered by a sparse, dry growth of vegetation, mostly low-growing saxifrages, *Dryas*, grasses, and lichens, in striking contrast to the lush growth of grass and other vegetation at the Sadlermiut site. This in itself was an indication of age, for recently abandoned habitation sites, which still retain much of their organic content, always support a dense plant growth. At this Dorset site, however, the scanty plant cover showed that the nutritive elements had long since been absorbed from the soil. At the edges of the steep bluff and at other places where wind erosion had removed the vegetation the ground was littered with flint chips, occasional stone and ivory artifacts, and bleached animal bones, mostly of seals and birds. We soon found, from testing, that shallow midden deposits extended discontinuously for an area of over 30 acres. These middens, covered by scarcely more than an inch of sod and vegetation, were the only indication that the site had ever been occupied by man; there were no large stones, no house pits, no surface irregularities of any kind. But before the summer was over, our excavations had yielded over 25,000 mammal bones, additional thousands of bird bones, and about 3,000 artifacts that were to throw new light on the whole problem of the origin and relationships of the Dorset culture.

We called this old Dorset site T 1, from Tunermiut, the Aivilik Eskimo name for Native Point. A second, and later, Dorset site, which we found buried beneath about a foot of windblown sand near the Sadlermiut site, was called T 2 (pl. 7, A). In 1955 a third Dorset site, T 3, only slightly younger than T 1, was found on the old beach line immediately below it, at 40 feet above sea level (pl. 7, B).

Midden areas at different parts of T 1, designated as Middens 1, 2, 3, and 4, were laid off in 5-foot squares, and a number of test pits were dug at other places. As the midden deposits were shallow and rested on well-drained sand or gravel, they were not frozen. Permafrost was encountered only at a depth of 2 feet or more in the underlying gravel. The first day's digging was sufficient to show us that this was a very unusual Dorset site. Flint implements were far more abundant than any other artifacts, and they were small and delicately chipped, like Dorset implements generally (pls. 8, 9). Most of them, however, differed in form from previously known Dorset types, and some of them were unlike anything known from America. The majority of the blades would be described as microlithic, and some of them in shape and technique resembled microlithic types found at early pre-Eskimo sites in Alaska and at Mesolithic sites in the Old World. The ivory harpoon heads, though basically Dorset in character, were specifically different from those found at most other Dorset sites.

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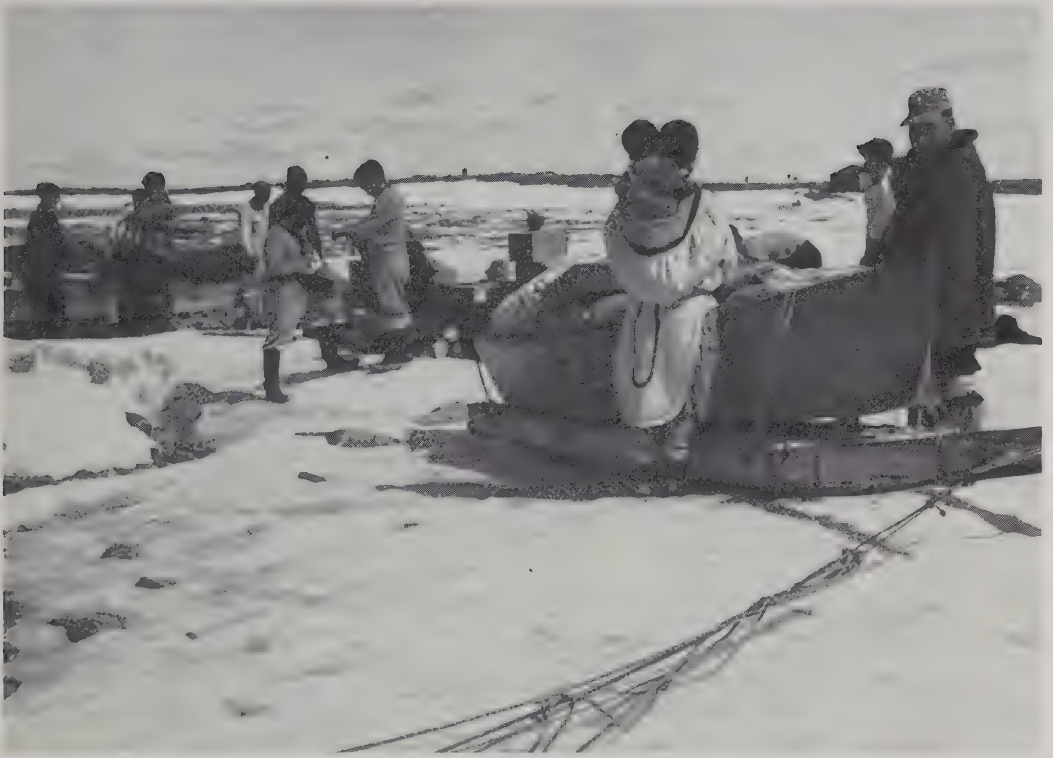
Other artifacts of ivory and bone such as dart points, knife handles, scrapers, and ornaments (pl. 10), were recognizable as Dorset mainly because line holes and other perforations, when present, were always cut or gouged out, according to invariable Dorset custom, for these, like all other Dorset people, had no knowledge of the bow drill. However, the forms of the implements themselves were for the most part new to the Dorset culture. The few ornaments and the simple straight-line decoration on artifacts also had no exact counterparts in Dorset culture. Finally, we found no trace at T 1 of such typical Dorset types as closed-socket harpoon heads with two line holes, open-socket heads with single spur and line hole at edge, harpoon foreshafts with lateral line hole, small knife handles with deep side sockets, ivory runners for hand sleds with ends fitted together, ivory spatulas, projectile points with deeply concave bases, end scrapers with expanded edges, concave side scrapers, asymmetric knife blades, and grotesque human and animal carvings. The absence of these typical Dorset features could hardly have been accidental for the amount of material excavated here was considerably greater than from any other Dorset culture site. As the work progressed it became clear that the T 1 site, though conforming in general to the basic Dorset pattern as known from other sites of this culture in the central and eastern Arctic, was in many other respects specifically different. It represented a new and distinctive phase of the Dorset culture; or, if it could be proved to be older than other Dorset sites it might more properly be described as proto- or formative Dorset.

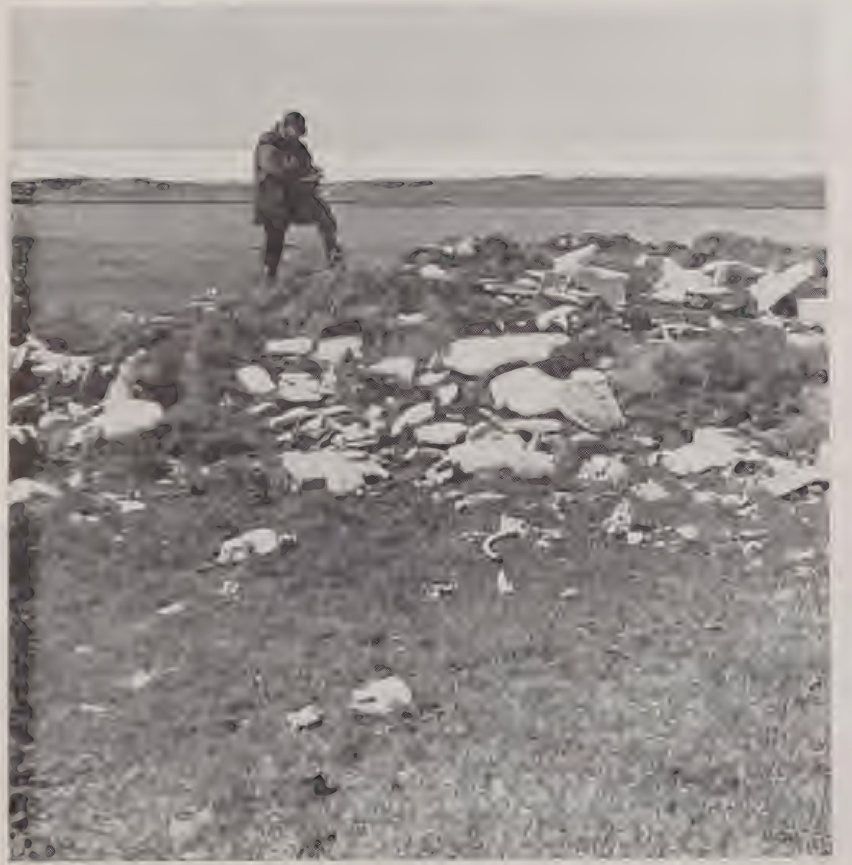
The question that confronted us was whether the T 1 site did, in fact, represent an older, simpler stage leading up to the classic Dorset culture, or perhaps a later, somewhat degenerate stage. The former explanation seemed more probable, for several reasons. First, the small T 2 site, which was typical Dorset, seemed definitely later than T 1. It was adjacent to the recent Sadlermiut site and was only 25 feet above sea level in contrast to the 70-foot elevation of T 1. The material excavated at T 2 included hardly any of the types that were prominent at T 1. On the other hand, it was significant that the limited excavations at T 2 yielded a number of typical Dorset implements that were not found at T 1. These were harpoon blades with deeply concave base, asymmetric knife blades, slender knife handles with deep side socket, ivory sled runners (for hand sled) with ends fitted together, and late Dorset-type harpon heads (pl. 11). As these were types that were characteristic of O'Bryan's late Dorset site on Mill Island, it seemed clear that T 2 was later than T 1.

The stone implements provided another means of deciding the question. As mentioned before, some of the T 1 implements were types not previously found in America. Among these were long rectangu-

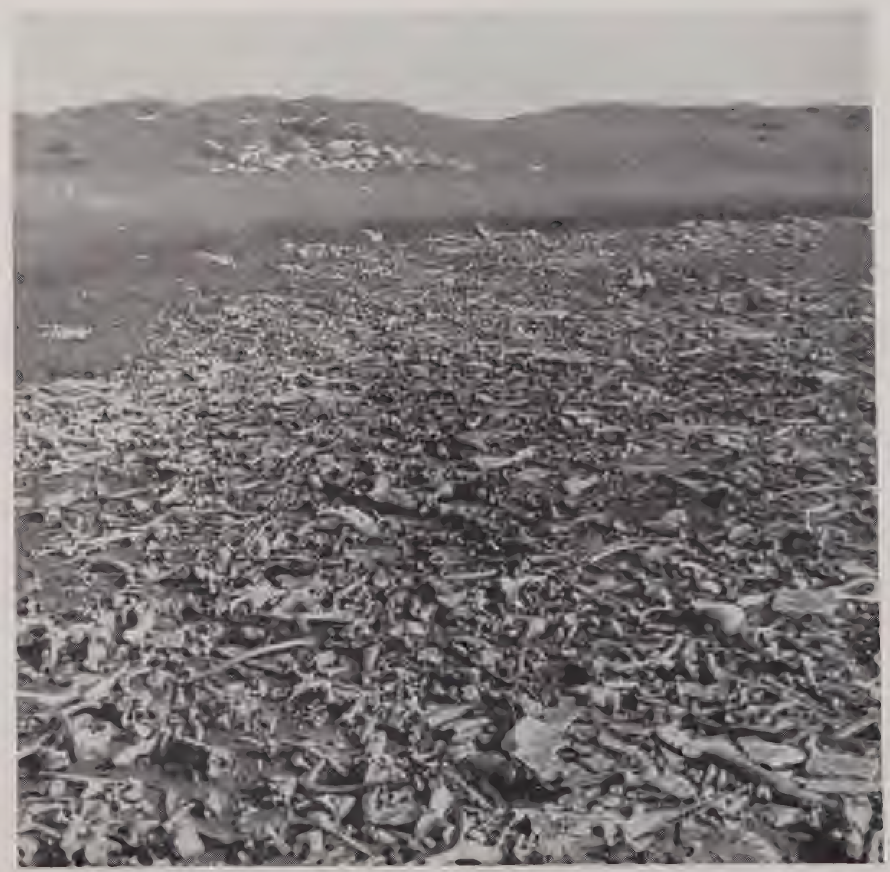


A. Loading dog sleds at Coral Harbour for 40-mile trip over the sea ice to Native Point, June 23, 1954. Boats were lashed to the sleds to hold the cargo and protect it from surface water.

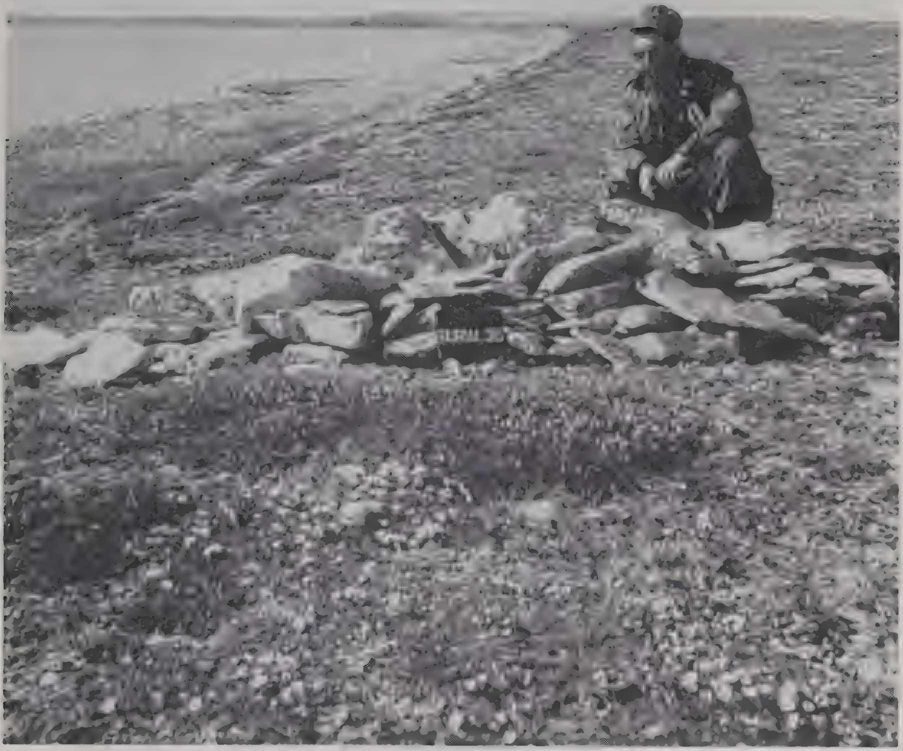
B. One of the sleds crossing a pool of water on the ice.



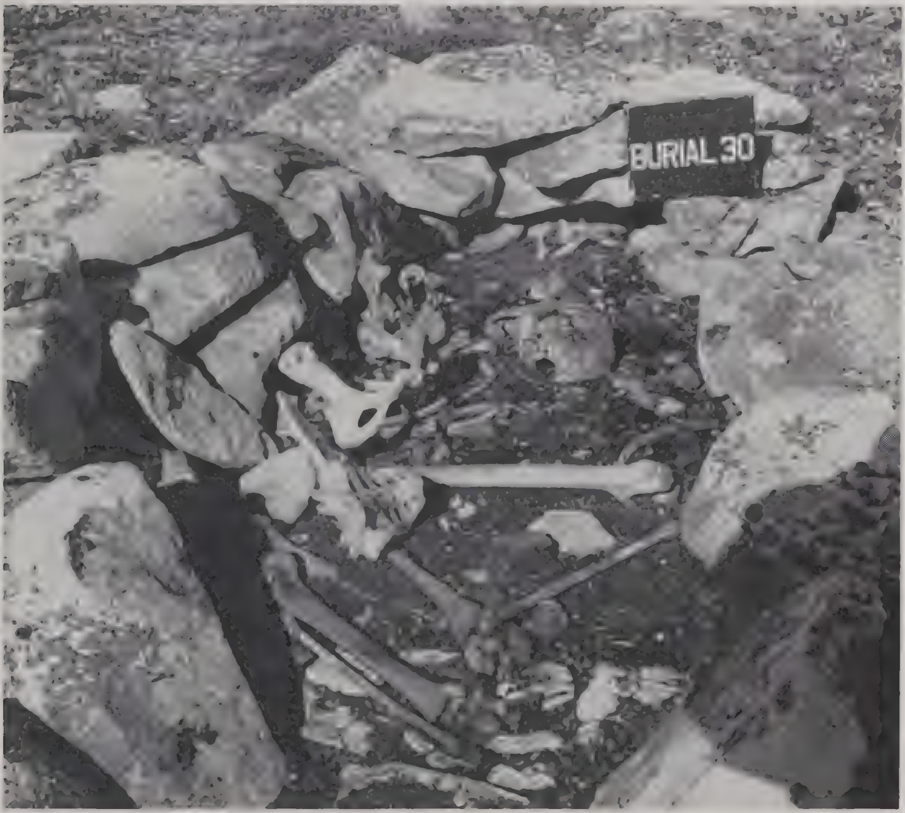
A. One of the more recent house ruins at Tunermiut (Native Point), once the principal settlement of the extinct Sadlermiut Eskimos. This house, built of stones and sod, was probably abandoned around 1902–03, when the tribe became extinct. The houses, numbering around 90, were measured, mapped, and described, and two of them were excavated.



B. Generations of Sadlermiuts threw their bone refuse into this shallow now dried-up pond. Visible here are thousands of bones of seals, walrus, caribou, dogs, polar bears, belugas, and foxes. Equally heavy concentrations of bones were found wherever excavations were made at the old village site, testifying to the abundant food supply available to the Sadlermiut.



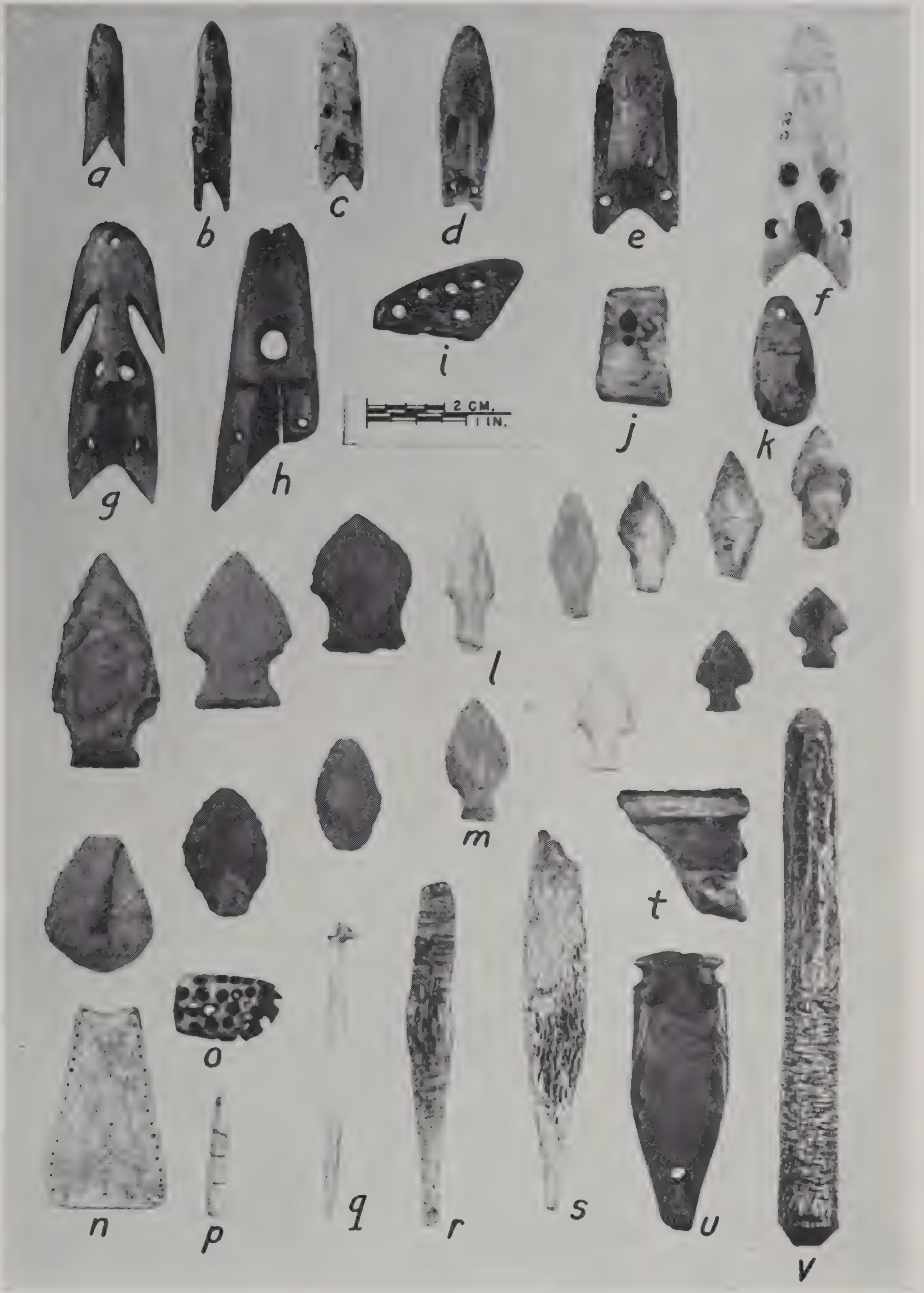
A. Stone burial ½ mile SSW. of the Sadlermiut site.



B. The same burial with covering stones removed. The body was that of a 35 to 40-year old woman. As in all the Sadlermiut burials, lemmings had built their nests here and were responsible for partial disarray of the bones.

A. Excavations at House 30, one of the oldest houses at the Sadlermiut site. The house depression, at right, and areas adjacent to it were marked off in 5-foot squares.

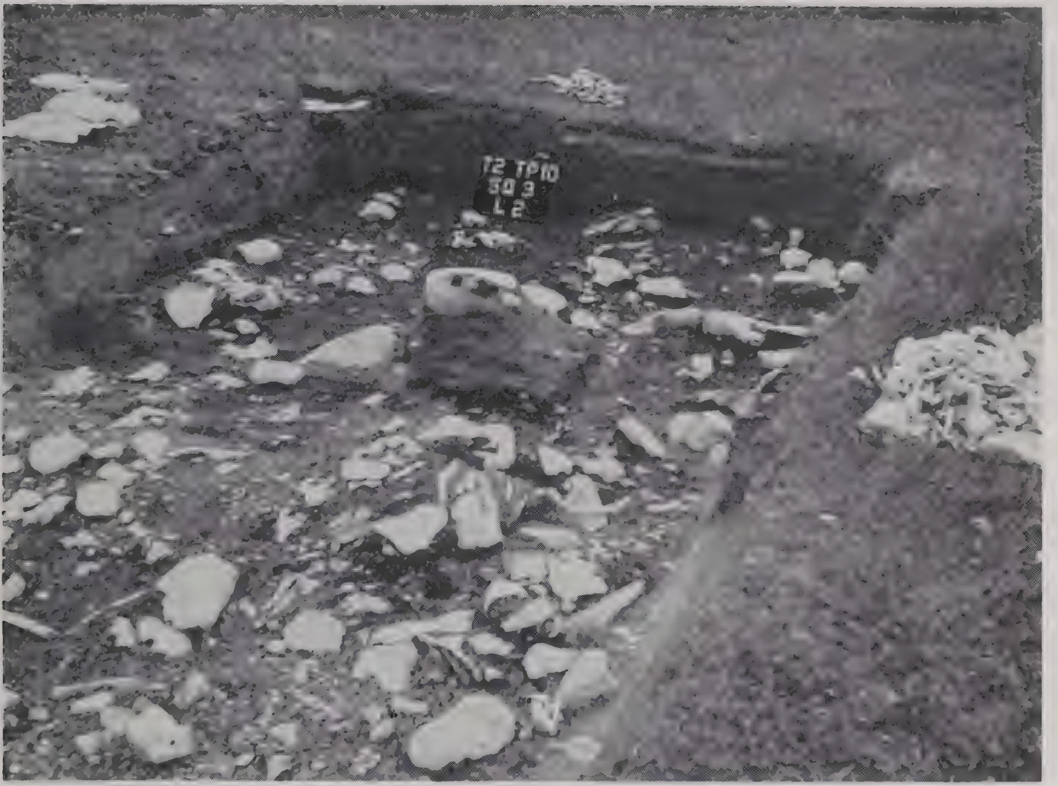
B. The House 30 excavations at a later stage.



Artifacts from Sadlermiut graves, middens, and house ruins at Native Point. ½ natural size. *a*, Dorset harpoon head, antler; *b-d*, small Sadlermiut harpoon heads, ivory and bone; *e-h*, closed- and open-socket harpoon heads, bone and ivory; *i*, harpoon finger rest, bone; *j*, *k*, bolas weights, ivory; *l*, stone end blades for knives, harpoons, and lances; *m*, stone side blades and arrow points; *n*, woman's hair ornament, bone; *o*, *p*, ivory ornaments; *q*, ivory wound pin; *r*, *s*, walrus-rib drills; *t*, rim sherd of limestone cooking pot; *u*, wooden socket; *v*, bone shaft for iron-pointed drill.

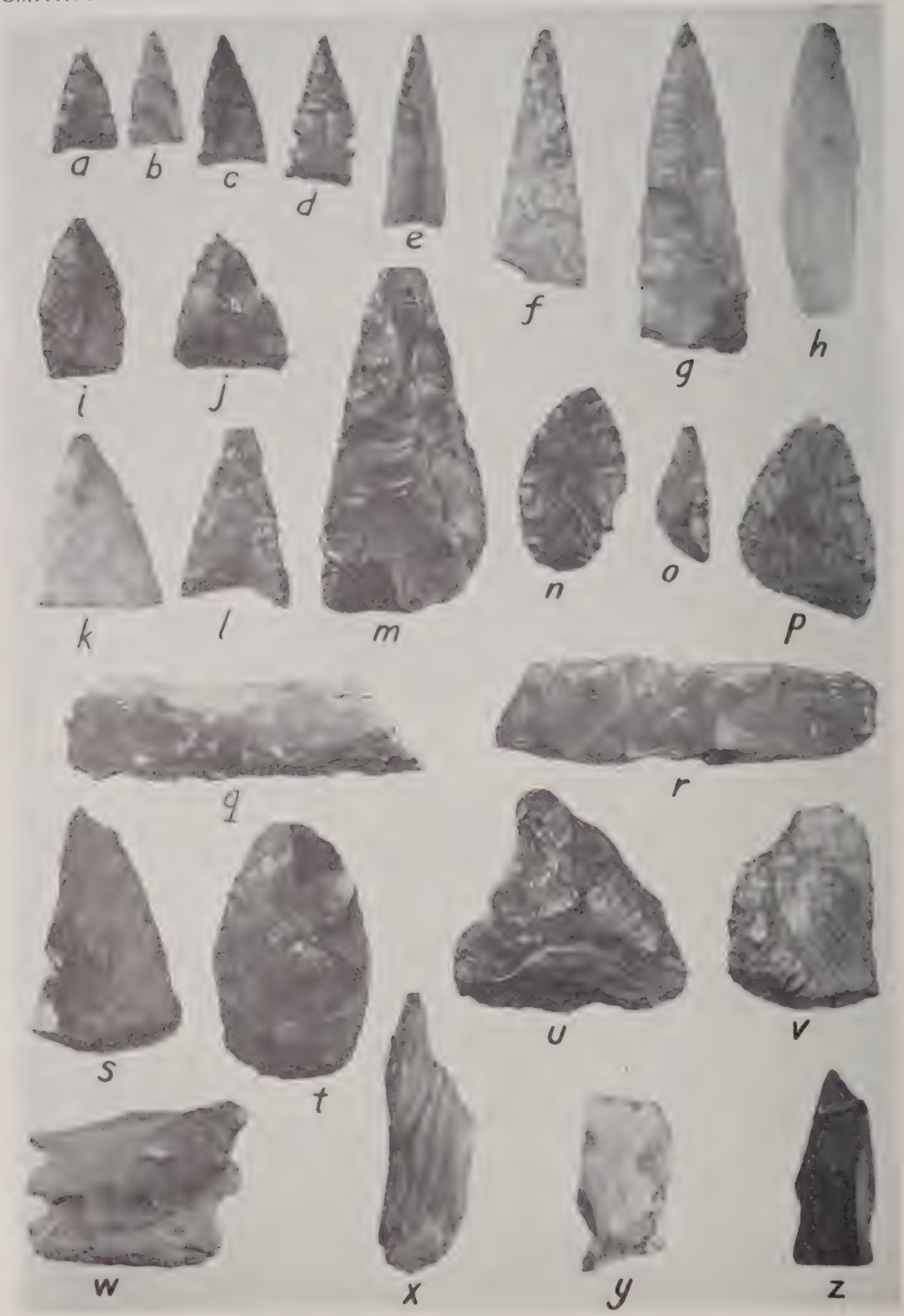
A. Helicopter view, July 3, 1955, of plateau on which the proto-Dorset site T 1 was situated. One of the expedition's shelter tents is visible at right. Looking inland, toward the south.

B. Excavations at Midden 1 of the T 1 site. The shallow midden was prolific in artifacts and mammal bones, the latter shown piled up beside the squares. A radiocarbon date of 2060 ± 230 years was obtained from samples of charred animal bones from another part of the site.

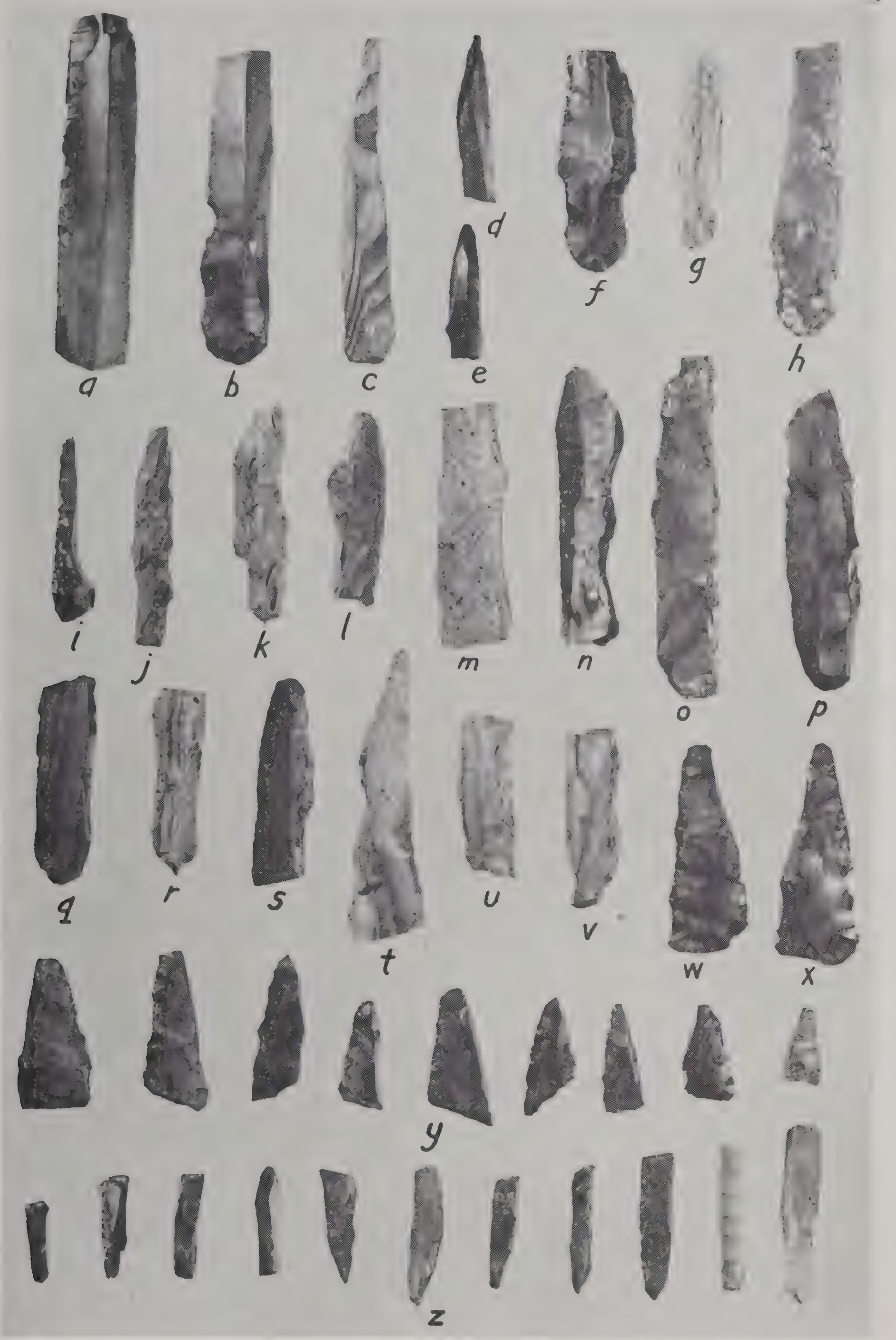


A. The late Dorset site, T 2, adjacent to the Sadlermiut site. Sadlermiut artifacts and well-preserved animal bones were found in the 12-inch layer of windblown sand that covered the Dorset stratum. The latter, a layer of black earth, contained numerous stones and weathered and patinated animal bones and artifacts of Dorset origin.

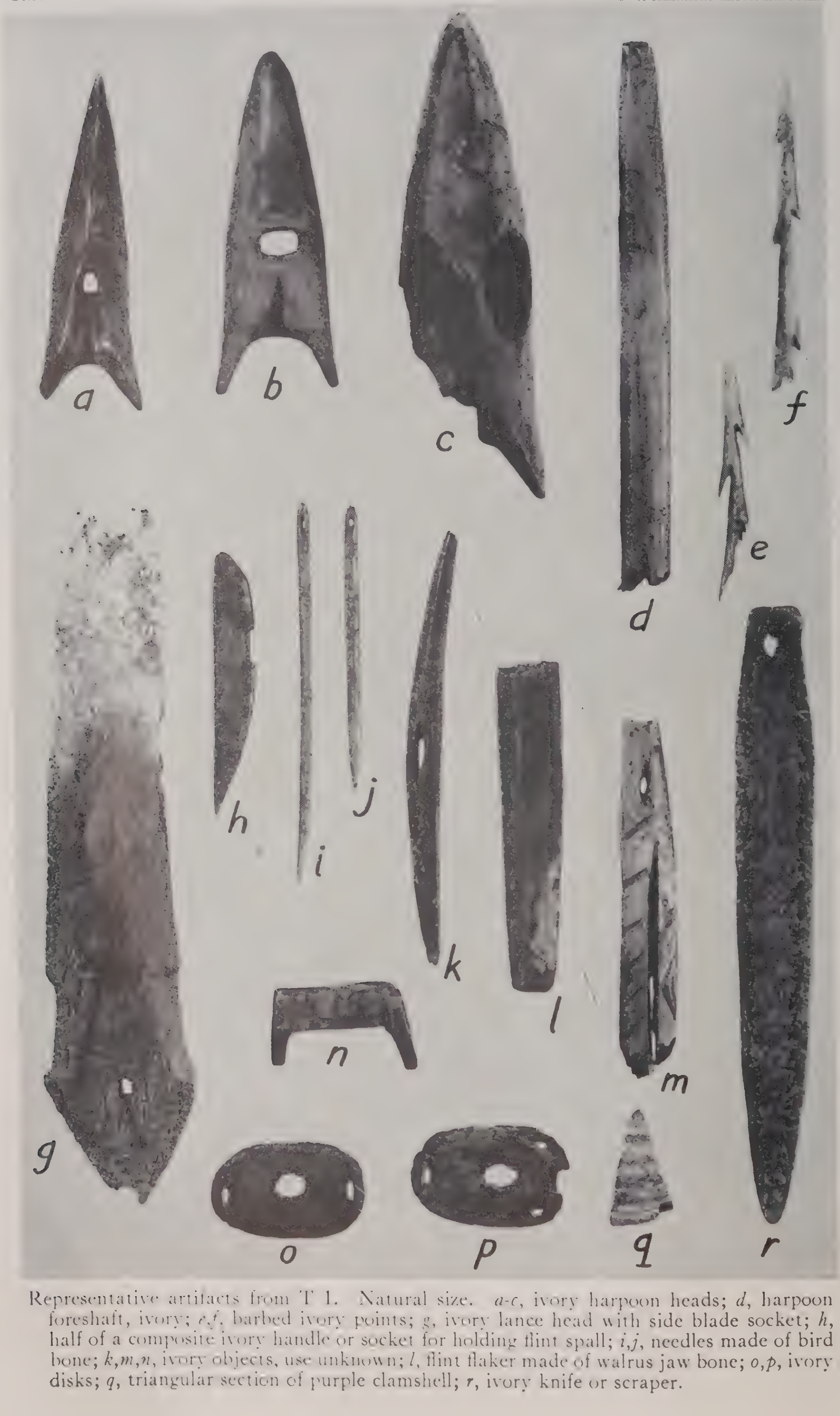
B. Beginning excavations at T 3, an early Dorset site only slightly younger than T 1. Photograph taken June 23, 1955, looking ESE. toward the T 1 plateau with snow bank at its base.



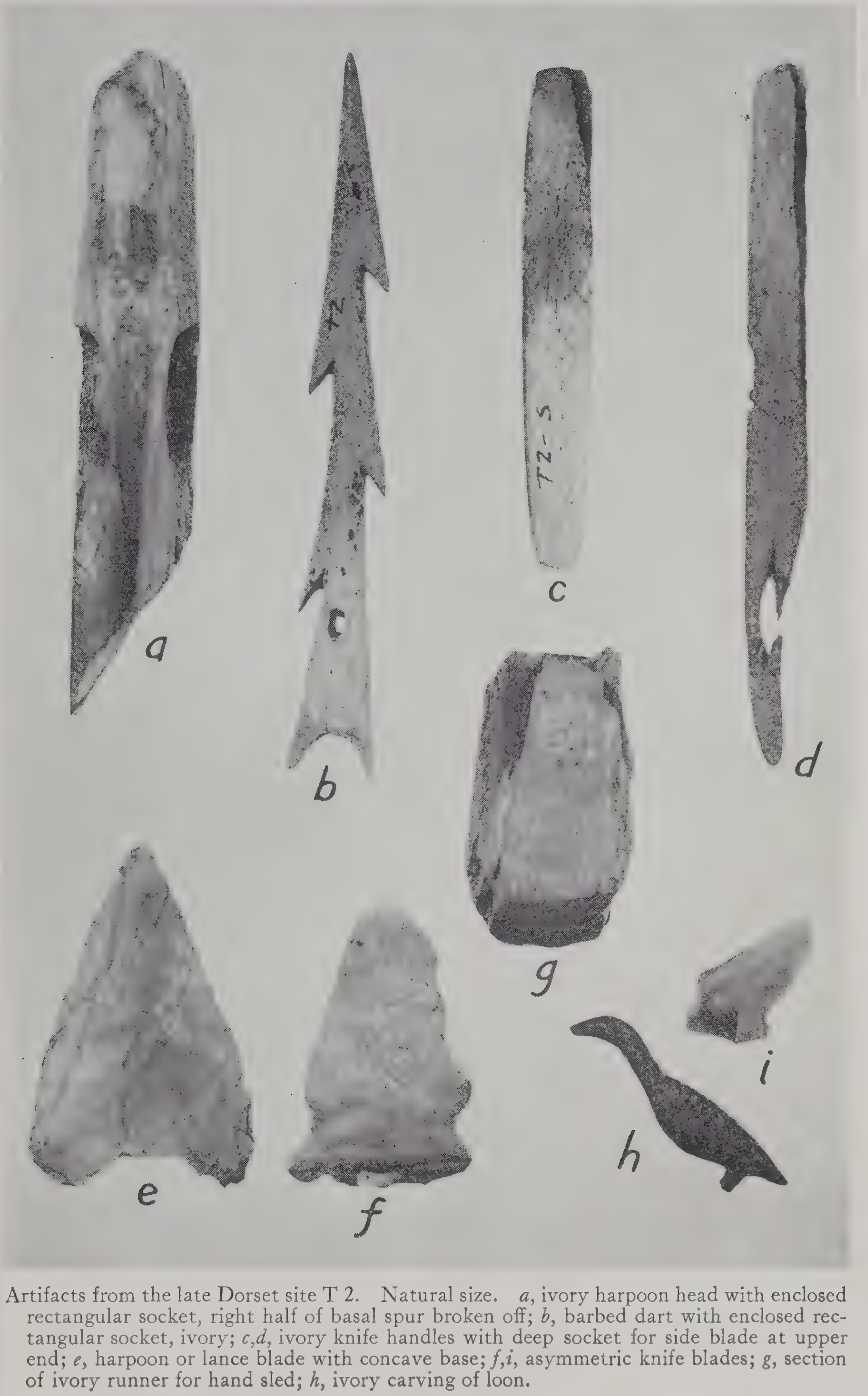
Stone implements from T 1. Natural size. *a-y*, chert, *z*, nephrite. *a-l*, end blades, bifaced and unifaced; *m*, large bifaced blade with slanting base; *n-r*, side blades (*q*, worked on both surfaces; *r*, worked on outer surface only); *s-v*, scrapers; *w*, blade tang with side notches; *x*, burin; *y*, *z*, burinlike implements with ground edges and sides.



Flake and spall implements from T 1, chert. Natural size. *a-e*, microblades, struck from prepared cores; *f-h*, microblades with tangs; *i-l*, heavy spalls struck from edges of prepared cores or chipped blades (*i*, struck from the edge of a bifaced knife or projectile blade, retains the tip of the parent blade); *m-v*, knives made from microblades and heavier flakes, with one thick edge and the opposite edge sharp for cutting; *x-y*, triangular microliths, usually with one edge dulled and a spall removed from opposite edge; *z*, spall implements, some finely retouched at upper end, probably used for grooving, inserted in composite handles like plate 10, *h*.



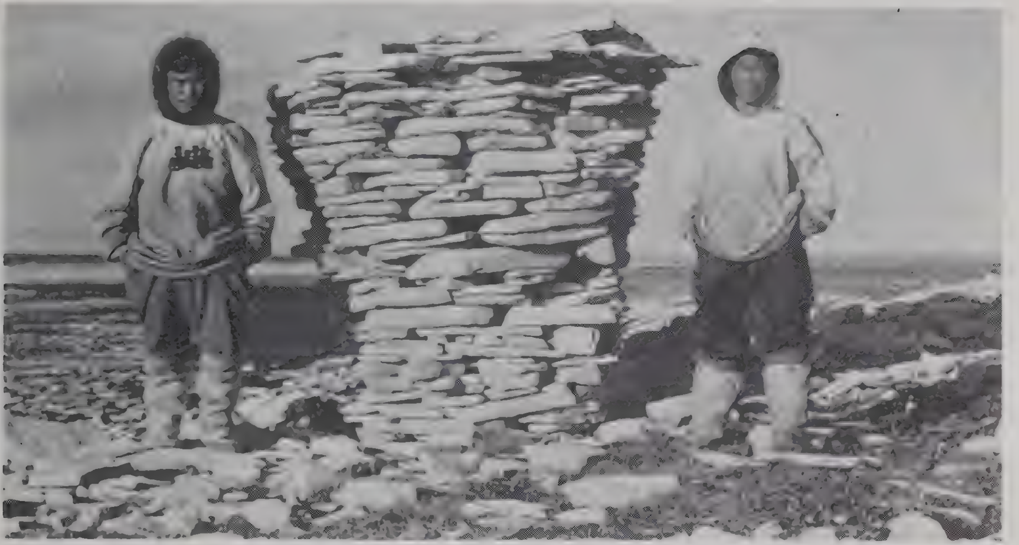
Representative artifacts from T 1. Natural size. *a-c*, ivory harpoon heads; *d*, harpoon foreshaft, ivory; *e,f*, barbed ivory points; *g*, ivory lance head with side blade socket; *h*, half of a composite ivory handle or socket for holding flint spall; *i,j*, needles made of bird bone; *k,m,n*, ivory objects, use unknown; *l*, flint flaker made of walrus jaw bone; *o,p*, ivory disks; *q*, triangular section of purple clamshell; *r*, ivory knife or scraper.



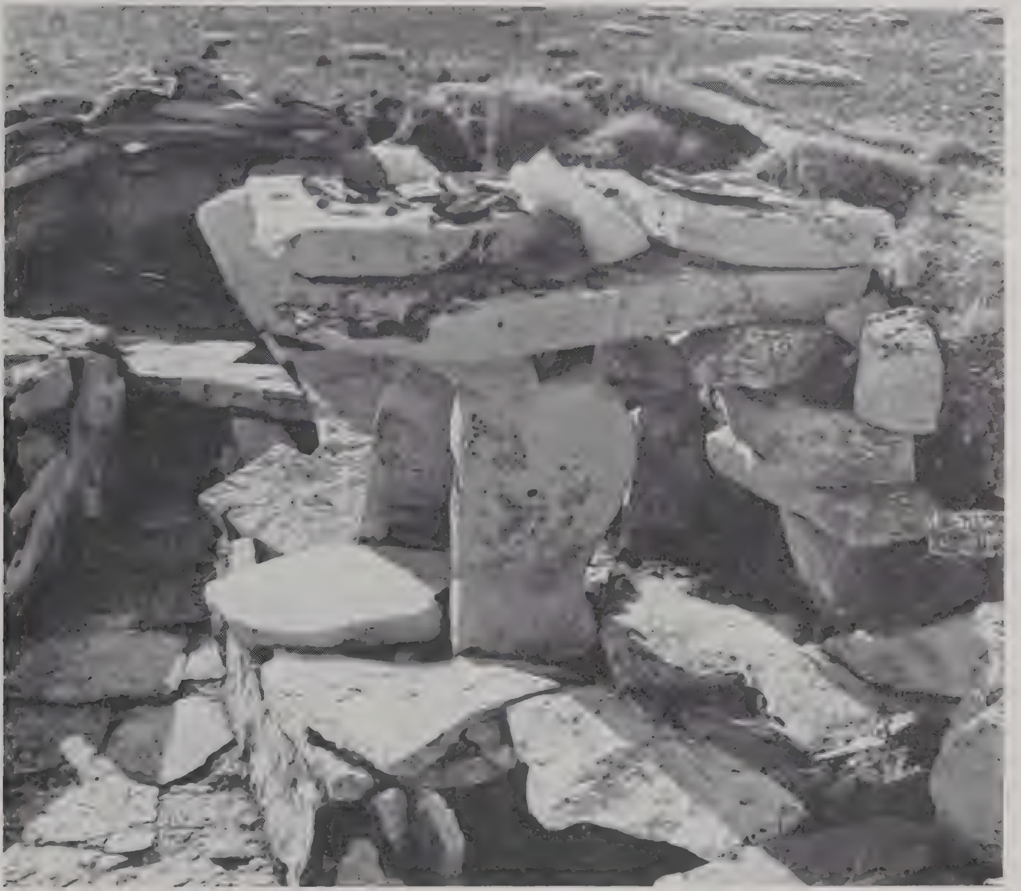
Artifacts from the late Dorset site T 2. Natural size. *a*, ivory harpoon head with enclosed rectangular socket, right half of basal spur broken off; *b*, barbed dart with enclosed rectangular socket, ivory; *c,d*, ivory knife handles with deep socket for side blade at upper end; *e*, harpoon or lance blade with concave base; *f,i*, asymmetric knife blades; *g*, section of ivory runner for hand sled; *h*, ivory carving of loon.

A. Counting and identifying mammal bones excavated at House 30, Sadlermiut site. Over 45,000 mammal bones excavated from this and the early Dorset site T 1 revealed interesting differences in the food economy and hunting practices of the two groups of Eskimos who had inhabited the same region 2,000 years apart. Bird bones, numbering in the thousands, were brought back to the Smithsonian for identification.

B. The Peterhead boat *Nayurak* being loaded with supplies and equipment for an exploring trip to Coats Island, June 18, 1954.



A. Two Aivilik members of the boat crew, Okerluk and Napayuk, stand beside a mushroom-shaped cairn at an abandoned Sadlermiut site on north shore of Coats Island. Cairns of this shape, peculiar to the Sadlermiut, were used as platforms for storing meat.



B. House No. 3 at the Sadlermiut site on Coats Island, after excavation had revealed the stone flooring and one of three sleeping platforms, shown at left. At center, stone roof supports, still in place, hold the flat slabs of limestone that had formed the roof of the house.

A. House No. 3, one of the oldest-looking house ruins at the Walrus Island site. Limited excavations in and around this house yielded only Dorset artifacts.

B. House 6, one of the more recent houses at Walrus Island. The house, constructed of granite slabs and boulders, was cloverleaf in shape.

lar side blades with shallow flaking on one or both surfaces (pl. 8, *q*, *r*); spalls struck from the lateral edges of prepared cores or of chipped blades (pl. 9, *i-l*); and knives made from microblades and heavier flakes, having one edge sharp for cutting and the opposite edge thick, like the back of a penknife, to serve as a rest for the finger (pl. 9, *m-v*). The first two are types that occur at Mesolithic and early Neolithic sites in Mongolia and Siberia (Maringer, 1950, pl. 30, figs. 1, 4, 5; pl. 25, figs. 7, 8; Okladnikov, 1950, fig. 62). The third type is one that was similar in function, though not in method of manufacture, to the "backed" blades so characteristic of the Old World Mesolithic. Plate 8, *h*, is an unusual flake blade, the under or bulbar surface of which is carefully retouched along the base, lower right edge and upper end, while the outer surface, illustrated, is unmodified. In form and technique this blade is closely similar to some of those from Mesolithic sites (Khina period) in the region of Lake Baikal and the Angara River (Okladnikov, 1950, figs. 16, 17).

There was still another reason for believing that the T 1 material may have had Mesolithic affinities and that it represented an early or formative stage of Dorset culture. Microblades—narrow rectangular or pointed flakes struck from prepared cores (pl. 9, *a–e*)—and delicate spall implements (pl. 9, *z*) were present in large numbers at T 1, and several burins (pl. 8, *x*) were also found. Burins, spalls, and microblades are among the implements most characteristic of the Denbigh Flint Complex recently discovered by Dr. J. L. Giddings on the Bering Sea coast of Alaska (Giddings, 1951). The Denbigh culture is at least 4,000 years old and probably older, and it has strong connections with the Old World Mesolithic. Though older than any known stage of Eskimo culture, there are strong indications that the Denbigh Complex was one of the sources from which the Dorset culture was derived (Collins, 1951, 1953; Harp, 1953).

More conclusive evidence of the age of T 1 finally came from radiocarbon analysis, the newly developed technique which makes it possible to date organic materials by measuring the amount of carbon 14 which they contain. Pieces of charred mammal bones from one of the test cuts were submitted to the University of Pennsylvania Carbon-14 Laboratory and were found to be 2,060±230 years old. This may be taken as a minimum date, for grass roots had penetrated even the deepest parts of the T 1 middens, and thus could have contributed an unknown amount of more recent carbon to the bone fragments.

The T 1 finds are also of interest in connection with a larger problem, that of the origin and relationships of Eskimo culture as a whole. Close resemblances have previously been observed between the tools and techniques of the earliest Eskimos and those of the early Neolithic and Mesolithic peoples of Eurasia, particularly in the region of Lake

Baikal and northern Europe. On the basis of these resemblances the present writer has suggested that Eskimo culture was of Old World origin, its earliest roots stemming from the Mesolithic cultures of Eurasia (Collins, 1943, 1951). The T 1 artifacts, which include additional types resembling those of the Mesolithic, as well as those of the Denbigh Flint Complex, would seem to lend weight to the hypothesis. In drawing this conclusion it is recognized of course that the T 1 site is thousands of years later than the Old World Mesolithic. It is equally true, on the other hand, that established culture patterns may persist over long periods of time. The Dorset people, in the isolation of the Arctic, may have perpetuated Mesolithic techniques and traditions that had long since faded away in the Old World.

The early Dorset Eskimos who lived at the T 1 site were a hunting people, like all Eskimos, and sea mammals were their principal source of food. The village they occupied 2,000 years ago is now half a mile back from the shore, an inconvenient location for people who were dependent on the sea for their livelihood. However, when the site was occupied geographical conditions in the Hudson Bay region were considerably different from those of today. As a consequence of the postglacial marine submergence the sea level stood higher in relation to the land, so that the T 1 plateau was much nearer the sea than at present.

Though we uncovered a number of hearths where the people had done their cooking, we could find no traces of dwellings of any kind. They might possibly have lived in snow houses, which would have left no trace, but this seems unlikely as we found no snow knives which Eskimos always use in constructing these winter dwellings; moreover, the large number of bird bones in the refuse suggested that the site had been occupied in summer as well as winter. If the climate 2,000 years ago was milder than at present, for which there is some geological evidence, the people could have lived there the year around in light skin-covered tents. Whatever the climate may have been, we can be sure that the early Dorset people wore tailored skin clothing, for bone needles, which could only have been used for sewing skins, were exceedingly common in the midden deposits. The skins used were probably those of seals and birds or, less likely, foxes.

In order to learn as much as possible of their food habits we kept every animal bone that was excavated. These were counted and whenever possible identified as to species. The majority of the mammal bones, such as ribs, vertebrae, and foot bones, were too difficult to identify in the field, but the skulls, jaws, and body bones such as scapulae, pelves, and limb bones presented no great difficulty. In 1954 over 25,000 mammal bones were excavated at T 1, of which over 3,000 were identified, and almost as many were obtained from the excavations at the Sadlermiut site (pl. 12, A).

TABLE 1.—*Distribution of identifiable mammal bones excavated at T 1 and Sadlermiut sites*

	T 1		Sadlermiut	
	Number	Percent	Number	Percent
Seal	2, 035	66. 5	1, 840	65. 2
Walrus	379	12. 4	149	5. 3
Bearded seal	299	9. 7	204	7. 2
Fox	315	10. 3	75	2. 7
Caribou	25	. 8	332	11. 8
Polar bear	4	. 1	38	1. 3
Dog	0	. 0	180	6. 4
Whale	0	. 0	6	. 2
Total	3, 057	99. 8	2, 824	100. 1

Comparison of the two series reveals some interesting differences in the hunting practices and food habits of these two groups of Eskimos who had occupied the same locality at different times in the past. The seal was the principal food animal of both groups, represented by 66 and 65 percent of the bones. Next in importance were the walrus and bearded seal. Fox bones were much more numerous at the Dorset site and polar bear bones were relatively rare at both sites. One somewhat surprising result of the bone count was evidence that the Dorset people made very little use of the caribou, which was one of the most important sources of food of the later Sadlermiuts. More striking still was the fact that not a single dog bone was found at T 1, though they numbered over 6 percent at the Sadlermiut site. The absence of dog bones may explain the paucity of caribou bones at T 1. Since they had no dog sleds and therefore no effective means of winter travel, the early Dorset people would have been unable to go on long hunting trips to the eastern side of the island where the caribou mostly lived.

Birds were also an important element in the diet of the Dorset and Sadlermiut people if we may judge from the thousands of bones excavated and brought back to the Smithsonian for identification. In the eastern part of the Dorset site about 90 percent of the bones were those of birds. It is probable that this part of the site was occupied only during the summer months when enormous flocks of migratory birds come north to breed. There are no indications as to how the birds were captured. We found no bolas weights or bird spears such as other Eskimos, including the Sadlermiut, used for this purpose. The early Dorset people may have caught their birds with snares made from perishable materials such as skin thongs or sinew, which would not have been preserved.

Identification of the bird bones from T 1 will provide at least a partial inventory of the kinds of birds that migrated to this area 2,000 years ago, for comparison with those now found there. The low-lying area around Native Point, with its network of ponds and lagoons, fairly swarms with bird life during the summer. The principal species that we observed nesting were king eider and Old Squaw ducks, gulls, terns, various kinds of waders, snow buntings, and Lapland longspurs. Flocks of Canada, snow, and blue geese were constantly passing by. Loons, singly or in small groups, seemed to maintain regular flight schedules over our camp, filling the air with their strident cacophony as they shuttled at high speed from one pond or lagoon to another. From two to seven beautiful white swans were usually visible on the surface of the large pond, which we called Swan Lake, a few hundred yards from our tents. Longspurs and snow buntings nested all around the camp area, seeking the protection of grassy tussocks and of fallen rocks and crevices in the old house ruins. The snow buntings showed a special predilection for old tin cans and human and animal skulls lying on the surface around the Sadlermiut site.

Under a permit from the Canadian Wildlife Service we collected a small number of migratory birds, mainly jaegers, gulls, ducks, geese, and loons, as well as lemmings which were particularly abundant in 1954 and 1955. As the avifauna of Southampton Island is fairly well known, our purpose was not to collect bird skins for museum specimens but for the ectoparasites—lice and mites—which they might contain. Each species of bird and mammal has its own species of insect parasites, and Col. Robert Traub of the Walter Reed Medical Center was interested in obtaining these for study in connection with his investigation of the role of such parasites in the transmission of typhus and other diseases. One of my most tedious afterdinner chores was the "louse hunt," in which I would painstakingly examine birds and lemmings in search of the elusive quarry. The jaegers, rapacious gulls with hawks' habits that prey on smaller birds, were heavily infested with mites, and several hundred could easily be scraped from a single wing feather and dropped into a vial of alcohol. Examination of the other birds and lemmings required constant use of the magnifying lens and was a much greater strain on one's eyesight and patience. Often the most prolonged fluffing of fur and feathers would produce no more than one or two lice or mites.

Our other afterhours activities involved the collecting of plants, fossils, fresh-water invertebrates, moths, butterflies, beetles, and other insects. The most abundant, and unwelcome, form of insect life was mosquitoes. July was "mosquito month" and life would have been miserable indeed if we had had no protection against them. Fortunately, however, Dr. S. A. Hall of the U. S. Department of Agriculture had provided us with mosquito repellents that worked like magic. With faces and hands covered with liquid repellent, we were able to dig in relative comfort even on warm, calm days, despite the frustrated buzzing of the clouds of mosquitoes that surrounded us.

We were fortunate, too, in the weather we had. Though many days were cold and windy and we had to wear our heaviest clothing, there were many other fine clear days when we could enjoy the warm sun and wish that there were more hours for digging, for exploring the surrounding country, and doing the other things we wanted to do. The average temperature was in the low 40's, sometimes dipping down to freezing at night and then rising to 60° or more at midday.

On July 17 Sandy Santiana and three other Eskimos from Coral Harbour—Napayuk, Okerluk, and Kolugjak—arrived in the Peterhead boat, *Nayavak* (Little Gull). They had come to deliver the rest of our food supplies and take us on an exploring trip to Coats Island. This island, though the second largest in Hudson Bay, is still relatively little known. Few scientists have been there, and the geology, botany, and animal life have not been studied. I planned to collect plants, fossils, and insects, and was especially anxious to obtain lemmings, which might be of a different species from those on Southampton. My lemming traps, however, proved useless, for as I learned from Sandy and later saw for myself, this little rodent, so typical of most Arctic areas, does not live on Coats Island. Another typical Arctic mammal missing there is the hare.

Our principal purpose was to look for Eskimo ruins, as the archeology of the island was also unknown. Some of the material utilized by Dr. Diamond Jenness when he first described the Dorset culture was reported to have been excavated by Eskimos on Coats Island. It would appear, therefore, that Dorset sites existed somewhere on the island. We also wished to locate Sadlermiut sites. The Eskimos whom Capt. Lyon found at the southwest end of the island in 1824 were in all probability Sadlermiuts, but so far as known this was the first and last time that anyone had seen living Eskimos on Coats Island, except, of course, the few Okomiuts who were brought there by the Hudson's Bay Company almost a hundred years later. The native inhabitants of Coats Island had simply disappeared from history. They may have died out or moved away soon after Lyon's time, or some of them may have continued to live there, isolated from other Eskimos, for some years later. From the ruins that we might find on the north side of the island we hoped to determine whether the Coats Island Eskimos were, in fact, Sadlermiut, and if so whether they differed in any way from the main body of the tribe that had lived on Southampton.

The *Nayavak* was a trim little vessel, 40 feet long and powered by a gasoline motor. Our quarters were in the tiny cabin in the bow, which was large enough for three men but rather crowded for four (pl. 12, B).

About an hour out of Native Point we encountered dense fog and heavy fields of ice. With visibility of 100 yards or less we slowed down to half speed, about 5 miles an hour. Sandy was now forced to follow a zig-zag course, steering with his foot as he stood up in the little wheelhouse peering ahead in search for safe openings among the ice floes. By midnight we were out of the ice but the fog continued until we finally anchored at 2 a. m. When the fog lifted later in the morning we found we were about 2 miles offshore from Coats Island, about midway of the north coast.

The *Nayavak* then headed eastward and a few hours later was approaching the north end of little Bencas Island when we saw four old house ruins on the opposite Coats Island shore. We moved in closer and went ashore in the canoe to investigate the ruins, prepared to stay all day. The houses were not the only evidence of human activity at this abandoned settlement. Between the houses and the beach we found an array of stone structures—caches, cairns, and a number of others difficult to identify as to function. The most impressive of these stone structures were two well-preserved cairns of a peculiar "mushroom" shape (pl. 13, A), a type which had been reported previously only from Sadlermiut sites on Southampton Island. This suggested at once that the site was Sadlermiut.

We lost no time in getting to work. Emerson and Taylor began excavating in House 3, the largest of the group, their first task being to remove the heavy fill of sod that had accumulated in the sunken interior. Ostroff photographed the houses and other structures and then began to excavate in House 4, the westernmost of the group. I began collecting samples of the grasses, mosses, and flowering plants that grew around the site, and made notes, measurements, and sketches of the houses and other stone features. I also made a careful but futile search of the surrounding area for traces of Dorset occupation.

House 3 was a 3-room structure, built somewhat in the shape of a cloverleaf (pl. 13, B). It had an over-all width of 22 feet and measured 15 feet from entrance to rear wall. It had a carefully constructed floor of stone slabs and four sleeping platforms, also made of stones, rising about a foot and a half above the floor. The roof, still partly intact, consisted of large flat slabs resting on stone uprights. The walls were made of stones piled one above the other. Blocks of sod were banked up along the outside of the walls and over the roof. The house was entered by means of a narrow passageway 10 feet long and 30 inches wide, at the outer end of which was a small stone anteroom. The other houses varied somewhat in size and shape, but had been constructed in the same manner.

By 8 p. m., when we went back to the *Nayavak* for the night, we had accumulated a rich store of artifacts, most of them from House 3. These included harpoon heads of bone and ivory, some equipped with stone and some with iron blades; ivory knife handles also with stone and iron blades; harpoon foreshafts and socket pieces, bone arrowheads, bolas weights for catching birds, lumps of iron pyrites for making fire, lamps made of limestone slabs cemented together, iron-bitted drills with nicely carved ivory handles, harness toggles, whetstones, ivory combs, and dish bottons made of whalebone. These artifacts were all typically Sadlermiut in form, as were the houses themselves and the curious mushroom-shaped stone cairns. The well-preserved houses, some with roofs partly intact, could not have been abandoned for many decades, and the presence of considerable quantities of iron was a clear indication of white contact, probably with the whalers. We had evidence, therefore, that Sadlermiut Eskimos had lived here on the north coast of Coats Island, probably within the past 50 years, though there had been no record of their existence.

The next day we examined two house ruins on the north end of Bencas Island. They, too, appeared quite recent but much less promising than those on Coats, so we returned and spent the rest of the day completing the excavations we had begun there, after which we started back to Native Point.

The warm, calm weather that had favored us throughout the trip continued on this last day and the Peterhead glided along over a glassy sea, surrounded by floating masses of ice that shone like blue crystal in the brilliant sunlight. We followed a course to the east and north of Coats and Bencas Islands, where ice conditions were favorable for hunting walrus and the big bearded seal, or ugchuk, which the Eskimos prize for its tough skin as well as its meat. One walrus and three ugchuk were shot by the Eskimos and their meat and hides stowed away in the hold.

After the Coats Island trip we resumed our work at Native Point, remaining for another month until the Peterhead *Akpa* (Guillemot), under command of Pamiulik, came to take us back to Coral Harbour.

We had realized soon after beginning work at Native Point in June that another season's work would be necessary at this remarkably rich and important old site. Accordingly we returned early in June of 1955, supported in part by a research grant from the American Philosophical Society. The party consisted of Bill Taylor, Norman Emerson, Jim Wright, and myself. As in the previous year we went from Carol Harbour to Native Point by dog team, making the trip in two days instead of one, a more comfortable arrangement that allowed us to camp overnight at Prairie Point and examine an old Sadlermiut village site of 15 stone and sod house ruins.

At Native Point we had another busy and productive summer. Additional excavations were made at the Sadlermiut site, at the early or proto-Dorset site, T 1, the later Dorset site, T 2, and at a third site, T 3, which appeared to be slightly younger than T 1. A large body of material was excavated which strengthened and rounded out the archeological picture obtained the previous year.

We planned to make another reconnaissance trip to Coats Island, this time toward the southwest end, and on July 20 we set out in the *Nayavak* for that purpose. As it was not much out of the way we decided to stop briefly at Walrus Island where there were several old house ruins we wanted to examine.

Walrus Island is a small granite islet 25 miles off the south coast of Southampton. The six house ruins lay in a valley extending east and west across the south end of the island. The three oldest-looking houses (Nos. 1, 3, and 5) consisted of a single room round to oval in shape (pl. 14, A). Another (No. 4), more recent in appearance, had two oval-rectangular rooms. The two remaining houses (Nos. 2 and 6), also recent looking, were cloverleaf in shape, with three rooms (pl. 14, B). The house walls had been made of massive blocks of granite piled one above the other. Most of the houses were deep and all had entrance passages from 5 to 10 feet in length. In some cases natural rock ledges and huge boulders *in situ* had been incorporated into the house structure to serve as parts of floors, walls, or sleeping platforms. House No. 6, the best preserved of the group, had upright stone pillars—roof supports—still in place, and fallen slabs indicated that the roof itself had been made of stones as in the case of the Sadlermiut houses on Southampton and Coats Islands. The absence of roofing slabs and supports in the other houses suggested that the roofs had been made of skins.

When we began to excavate we had naturally assumed that these well-preserved house ruins were of Sadlermiut origin. They were similar in general structure and two of them, Nos. 2 and 6, had the cloverleaf shape characteristic of many Sadlermiut houses. Moreover, some of these Walrus Island houses had been partially excavated in 1936 by the British Canadian-Arctic Expedition (Manning, 1942) and found to contain material described as resembling Sadlermiut, with only a few Dorset artifacts which might easily have been explained as relics. We had not been digging long, however, before we began to suspect that the houses were Dorset rather than Sadlermiut. With this unexpected development, we stayed at Walrus Island for five days instead of going on to Coats Island as originally planned.

Our excavations in and around five of the houses produced over 100 typical Dorset artifacts, mostly stone, and large numbers of stone flakes with retouched edges such as had been found at T 1, and which were also probably Dorset. In contrast we found only three artifacts that were unquestionably Sadlermiut and seven others that were non-Dorset and therefore probably Sadlermiut. Eight of the non-Dorset artifacts came from House 2, the recent-looking house that was irregularly cloverleaf in shape; however, the bulk of the material from this house, found on and between the floor stones, was Dorset. The other two non-Dorset objects were found in House 4, together with several Dorset pieces, also from the floor area. The three oldest-looking houses (Nos. 1, 3, and 5) yielded only Dorset material, though little digging was done in the last two. No work was done in House 6 and no artifacts were found in or around it; this well-preserved cloverleaf-shaped house, typically Sadlermiut in form, may well have been built by the Sadlermiuts.

The few Sadlermiut artifacts that we found in Houses 2 and 4 and the apparently larger amount of such material reported by the British Canadian-Arctic Expedition indicate that some of the Walrus Island houses had been occupied by Sadlermiut Eskimos, probably around the beginning of the present century. Such an occupation, however, would have been secondary, for our excavations, which revealed Dorset material in the floor areas of Houses 2 and 4, as well as in Houses 1, 3, and 5, showed that the Dorset people were the original occupants of these houses.

If the Dorsets had lived in the houses originally they also in all probability had built them. The Walrus Island ruins thus provide the first adequate information on Dorset house types. One of the houses that contained Dorset material, No. 2, was of the cloverleaf shape characteristic of many Sadlermiut houses. This suggests that the Sadlermiut may have derived their principal house type, like other features of their culture, from the Dorset. It lends weight to the supposition that the Sadlermiut were culturally, perhaps even physically, descended from the mysterious Dorset people, who now appear to have represented the basic, dominant Eskimo population in the eastern part of the Canadian Arctic. The Walrus Island finds thus rounded out the cultural reconstruction previously established at Native Point. There, at the proto-Dorset site T 1 and at the somewhat later site T 3, we had been able to trace the earlier history of the Dorset Eskimos and obtain an insight into Dorset culture in the process of formation. The excavations at these early sites, plus those at the later, classic Dorset site T 2 and the Sadlermiut site, had thus brought to view a picture of cultural development and continuity over a period of 2,000 years.

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